Great plains

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Bureau of Agricultural Economics

ADJUSTING AGRICULTURE IN THE NORTHERN GREAT PLAINS FOR WAR AND POST-WAR NEEDS

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PREFACE

This is a report on farming adjustments that are needed in the Northern Great Plains to meet war needs and to stabilize agriculture after the war. The following members of the staff of the Bureau of Agricultural Economics were primarily responsible for its preparation: Raymond B. Hile, Ramey C. Whitney, Olav Rogeness and T. S. Thorfinnson. Statements pertaining to sociological problems were prepared by Donald G. Hay. Field representatives of Federal agencies participated in discussion of the problems under consideration.

Representatives of the State colleges in North Dakota, South Dakota, Nebraska, Montana, and Wyoming were consulted relative to the changes anticipated during the period 1943-45. In most instances representatives of the following departments participated: Animal Husbandry, Agronomy, Agricultural Economics, Dairy, Poultry, Agricultural Engineering, and Entomology. Representatives of some of the State colleges also participated in the preparation of the long-time estimates. This was especially true in Nebraska.

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CONTENTS

	Page
Introduction	1
The Northern Great Plains as a whole	4
The major production areas	6
The grass area	13
Development of the grass area	13
Adjustments in the grass area	15
Suggestions for promoting desirable adjustments	22
The wheat area	24
Historical development	26
Adjustments in the wheat area	28
Suggested measures for encouraging desirable adjustments in the wheat area	39
The corn area	40
Adjustments in the corn area	43
Summary of suggestions for facilitating desirable adjustments in the corn area	52

INTRODUCTION

American farmers have been asked to increase production materially in order to supply the food required in the present war emergency. Increased food supplies are needed for domestic consumption and for export under the lease-lend legislation. The magnitude of the increase is indicated in table 1, which shows the changes suggested in 1942 for the major products in the Northern Plains States.

The most significant adjustment suggested for the Northern Great Plains in 1942 is the increase of 18 percent requested in marketings of cattle and calves. This represents a greater proportional increase than that required for the Nation as a whole. The increase of 12 percent in the production of eggs is approximately the same as the national goal. Moderate increases are suggested for hogs, sheep and lambs, and milk cows. Small increases are needed in corn and feed grains. Some reduction in rye harvested for grain is suggested but the acreage of rye pastures should be increased. The most significant change in crops is the suggested reduction of 11 percent in wheat acreage.

Marked reductions occurred both in crop acreages and livestock numbers in the Northern Plains during the past decade of drought and low prices. Much cropland is still idle. Moderate increases can easily be made in livestock numbers and in acreages of feed crops. However, wheat

acreage has already been materially reduced from the level of 1930 and the further reduction now suggested is a difficult adjustment problem for wheat farmers.

Table 1.- Suggested changes in acreage, number, production and marketings in 1942, compared with 1941, Northern Great Plains 1/

Item	Unit	Percentage change	
		United States	Northern Great Plains 2/
		Percent	Percent
Hogs marketed	Pound	5	6
Cattle and calves marketed	do.	15	18
Sheep and lambs produced	do.	2	4
Milk cows	Number	3	4
Milk produced	Gallon	7	4
Eggs produced	Dozen	11	12
Grain sorghums planted	Acre	11	31
Oats and barley planted	do.	3	4
Corn planted	do.	1½	8
All hay harvested	do.	1	0
Wheat planted	do.	-13	-11
Rye harvested	do.	0	- 6
Flax planted	do.	0	0

1/ Changes in cattle and calves, hogs, sheep and lambs, and grain sorghums are based upon 1940 production.
2/ Includes North Dakota, South Dakota, Nebraska, and the plains portions of Montana and Wyoming. (See fig. 1.)

Producers in the Northern Plains will be expected to contribute their share to the food supplies of the Nation during the emergency period. The increases suggested for 1942 are indicative of a trend which may be expected to continue for the duration of the war emergency. The necessary increases may be obtained without difficulty, if the production goals are properly allocated to the various production areas in the plains. Maladjustments may be avoided by requesting increases in areas where production should logically be increased from the long-term standpoint. Pressure for increase should be avoided in areas where this is contradictory to the long-term interest of agriculture.

The primary purpose of this report is to relate the emergency increases in production to the long-term desirable adjustments in the Northern Plains, and to suggest ways of encouraging the kind of changes which are in harmony with both emergency and long-term objectives. The problem will be approached by major production areas, since the production advantages of the plains differ widely geographically.

The competitive position of crops is constantly changing from year to year in the various areas of the plains, as a result of variability in a great many factors. Of primary importance are political and economic situations. Important, also, are governmental programs in agriculture, changes in price, technological developments, and variability in climate. In this study the assumptions regarding these factors during the war emergency are:

1. Continuation of the war with an all-out defense program or, if the war ends, a rehabilitation program which would have as great an effect on industrial activity in the United States as the all-out defense program.

2. Increases in the production of raw and semi-finished materials in whatever degree required to insure full utilization of available labor, except for turnover and military service.

3. Rising income taxes and property taxes. It is assumed, however, that the increase in taxes will not completely absorb the increase in national income payments to individuals.

4. Rising living costs.

5. Partial government control of prices. This will probably affect wheat, corn, livestock and livestock products, and may affect some industrial goods.

6. Government-sponsored encouragement to farmers to increase the production of meats, dairy products, eggs, and other essential products during the emergency period. The means used for encouragement will be price support through Government purchase of these products, release of feed supplies from the Ever-Normal Granary and adjustment of programs to encourage an increased production of feed crops essential for foods deemed vital for the national defense.

7. Continuation of present agricultural programs and loans on basic commodities, with minor adjustments in keeping with the emergency.

8. Fewer farm laborers and higher wages.

9. Rising costs of production of agricultural products. This includes machinery costs.

10. Rising farm incomes.

11. Increase in land values accompanied by land speculation.

12. Normal climatic conditions and average production.

For the long term the following assumptions were made:

1. Demand for farm products greater than during the period 1935-39.

2. No change in present tariff on beef and flax.

3. Relatively full employment of labor, both industrial and agricultural, at reasonable wages.

4. Continued gradual increase in expenditures for family living on farms, because of rising levels of living.

5. Relatively low prices for wheat and corn.

6. Increased yields of corn, owing to the use of hybrid seed.

7. Continued increase in mechanization in all parts of the Northern Plains, with greatest emphasis in the eastern one-fourth of the area. This increase includes tractors, combines, and power machinery in general.

The basic material for this report has already been used in allocating national goals for 1942 among States. It has also been used in some instances as a guide in allocating the State goals to the principal production (or type-of-farming) areas and to individual counties within these areas. In the event that the present emergency continues for several years, up-to-date information of this type will be useful in allocating production goals in the future.

THE NORTHERN GREAT PLAINS AS A WHOLE

Agricultural production was excessively increased in the Northern Plains during and immediately following World War I. The acreage of cropland was materially expanded, through breaking land formerly used for pasture. Wheat production was grossly overemphasized. Under the impetus of "war prices" land values soared to new highs, small farms flourished, the number of farms increased, farm living costs rose, excessive investments in improvements were made, and the whole farm economy became adjusted to the abnormal circumstances prevalent during the war period.

The difficult readjustment period which followed culminated in the decade of drought and depression of 1930 to 1940. Millions of acres of cropland lay idle, widespread dust storms claimed national attention, livestock starved for want of feed, all-time lows in rainfall were established, former temperature records were broken, and human suffering was alleviated only by governmental intervention. The 1940 Census showed a decline of 3 percent in the total population, a decline of 16 percent in the farm population, and a decrease of 8 percent in the number of farms compared with 1930.

Regardless of the causes which precipitated the unfavorable circumstances of the past decade, it is important to remember that the stimulus of the war period assisted in "setting the stage" for the difficulties of the Thirties in the Northern Plains. Owing partly to misdirected expansion, the economy of the plains was particularly vulnerable in the depression which followed. Now that we have entered another emergency war period, the lessons learned during the previous war emergency should be observed. Repetition of past mistakes can surely be avoided to a considerable extent.

Many of the adjustments that developed during the past decade are desirable. The trend toward fewer farms, larger farms, more land in grass, and less land in wheat, should probably be continued. Reversal of these trends during the present emergency should be avoided insofar as possible, consistent with food needs. However, some undesirable situations developed; for example, the accumulation of a large acreage of idle land, excessive reduction in hog numbers, and depletion of ranges and feed supplies. The idle land should be returned to crop use or retired permanently to grass, feed supplies should be replenished and livestock numbers increased to a level consistent with good long-term use of resources and needs of the emergency period.

Estimated Emergency Adjustments

Before the national production goals for various farm products in 1942 were announced, the probable production responses to war-time prices were estimated. 1/ Representatives of the five State colleges in the Northern Plains States participated in making these estimates. 2/ The estimated increases may be somewhat conservative because they were made between May 15 and August 1 of the current year. Possibly the full effects of rising prices were not evident at that time, but these estimates will serve as a guide in measuring the direction and magnitude of the adjustments expected in the event that the present emergency continues for several years.

The increase requested in the production of livestock and livestock products deemed vital to the national defense will necessitate the feeding of grains now stored in the Ever-Normal Granary. The Ever-Normal Granary, considered essential for the protection of both domestic producers and consumers even in peace-time, becomes even more important during war. Because

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1/ The basic assumptions regarding the price situation are given on page 3.

2/ Representatives of the State colleges in North Dakota, South Dakota, Nebraska, Montana, and Wyoming, participated. In addition to the State BAE representative, members of the following departments contributed to the estimates in most cases: Animal Husbandry, Agronomy, Agricultural Economics, Dairy, Poultry, Agricultural Engineering, and Entomology.

of this and recent increases in feed consumption, an increase in corn acreages in 1943-45 was assumed. This, together with the adjustments expected in the production of other commodities by 1943-45, and the long-term desirable changes are presented in table 2 and in other tables as a percentage of production in 1939. They provide a basis for approaching the emergency adjustments in light of long-time desirable changes.

It is expected that the war emergency situation will encourage an expansion of corn, flax, rye, hogs, cattle feeding, and sheep production, and a reduction of wheat production beyond that which seems desirable from the long-term standpoint. On the other hand, the number of cows milked may not increase as much as is desirable; regrassing of low quality cropland may be limited during the war period and the number of farms may decline more slowly than is desirable. Temporary expansion of crop acreages or of livestock numbers is not necessarily harmful to agriculture. Moderate expansion may be justifiable in some cases, from the viewpoint of both defense needs and the farm operator. Expansion may be excessive, however, especially in portions of the Plains where the type of production involved is profitable only when prices are abnormally high.

The expected movement of some farm population to defense activities outside the Northern Great Plains will make for less population pressure. A similar out-migration from villages and cities will also make for reduced competition for farms. There may be some increase in "town farming" both through some town residents taking on the operation of adjacent farms and by farm operators moving their residence to towns and continuing their farm operations.

There is need for adjustment of population numbers to the productive capacity of the area. The natural increase in population makes it necessary to appraise possible "outlets" elsewhere in the nation for the surplus young people of the Plains. The population settlement pattern needs adjustment in relation to productive capacity and in relation to improved functioning of institutional services such as schools, churches, and roads.

With less pressure of population upon land, anticipated during the war emergency, proper adjustments in agriculture will be facilitated.. Any means that may be devised for increasing the "outlets" to nonagricultural employment will further assist. The situation, both economic and social, must be analyzed for each production area separately, rather than for the Northern Plains area as a whole.

THE MAJOR PRODUCTION AREAS

The three major production areas of the Northern Plains are portrayed in figure 1. Distinction between these areas is based upon a number of factors, such as climate, soil, topography, productivity, present land use, and its history. Included in the historical factor are trends in the acreages of various crops and number of livestock, trends in production,

MAJOR PRODUCTION AREAS IN THE NORTHERN PLAINS

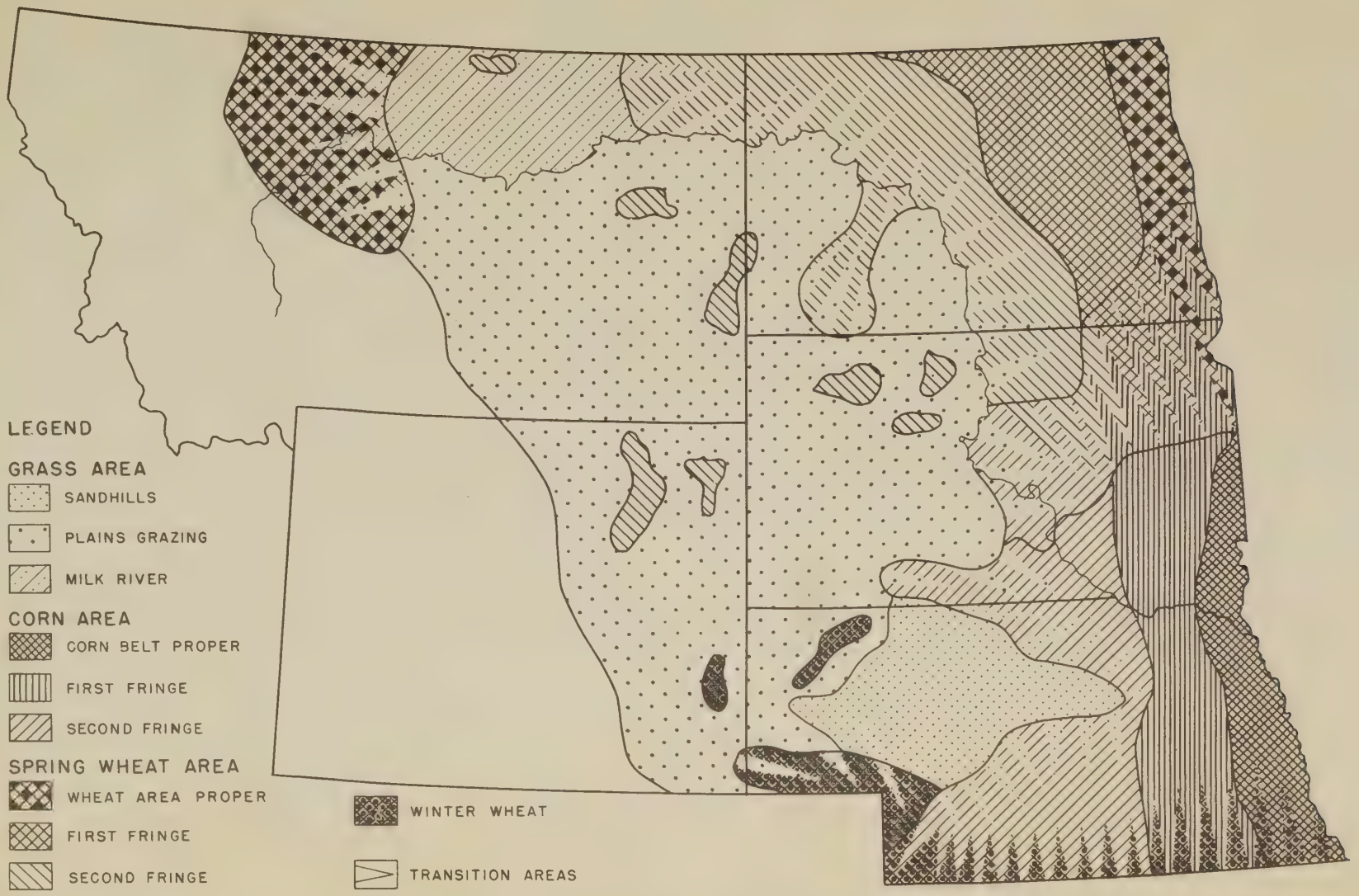

FIGURE 1

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Table 2.- Estimated adjustments in acreage, numbers of livestock and production in the Northern Great Plains 1/

Item	Unit	1939 2/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms	Number	317	- 2	-16
Pasture land 3/	Acre	106,057	0	8
Total cropland	do.	71,655	0	-12
All corn	do.	10,272	15	- 2
Sorghums, excluding syrup	do.	2,822	-11	-17
Oats	do.	4,496	- 3	- 6
Barley	do.	4,184	18	13
Rye	do.	1,803	2	- 5
Flax	do.	519	17	2
All wheat	do.	14,844	- 9	- 1
All hay, excluding sorghums	do.	9,654	5	10
Legume hay 4/	do.	1,636	21	29
Potatoes	do.	254	10	15
All cows and heifers 2 years old and over	Number	3,140	10	26
Kept mainly for milk	do.	1,683	7	10
Feeder cattle bought	do.	341	41	22
Sows and gilts farrowing	do.	751	96	75
Ewes over 6 months old	do.	5,344	15	7
Feeder lambs purchased	do.	1,084	22	17
Chickens raised	do.	43,539	20	24
Total meat production	Pound	3,581,822	42	40
Milk production	Gallon	672,447	13	15
Egg production	Dozen	135,536	19	39

1/ Includes North Dakota, South Dakota, and Nebraska, and the plains portions of Montana and Wyoming.
2/ Taken from 1940 U. S. Census adjusted for estimated normal abandonment, except estimates of feeder cattle and lambs purchased and meat production. The last 3 items were based primarily on statistics of the Agricultural Marketing Service.
3/ Includes all land in farms, except cropland.
4/ Annual legumes, alfalfa, sweetclover, lespedeza, and timothy.

in types of operating units and in size of farm. Climatic hazards and maladjustments in the use of land resources are also revealed. The history of production trends provides a rough approximation of the production advantages of the respective areas.

The three production areas are distinguished by the dominant type of production. In the wheat area, wheat is the major enterprise supplemented largely by feed grains and roughage-consuming livestock. In the corn area corn, hogs, beef, and poultry, are of major importance, supplemented to a minor extent by other feed grains and wheat. Cattle and sheep are the chief sources of income in the grass area, but dry-farming and irrigation appear in scattered spots. These spots, though small are rather important from the standpoint of production.

Productivity of land per acre is highest in the corn area, second highest in the wheat area, and lowest in the grazing area. Stability of crop yields varies in the same way. The economy of the Corn Belt is most stable. The largest acreage per operating unit is found in the grass area; the smallest in the corn area. Size of individual operating units varies most in the grass area and least in the corn area.

The subdivisions of the wheat and corn areas represent varying degrees of climatic risk, increasing westward. For example, the "Corn Belt proper" supports a more stable economy than does the "first fringe". The "second fringe" represents the high-risk margin of the Corn Belt. From east to west the average yield of corn per acre declines and the degree of variability in yield increases. The grazing area has been divided into three sub-areas, the Nebraska sandhills, the Milk River area north of the Missouri River in Montana (in which there is considerable dry-land farming), and the large Plains grazing area in which there are many dry-land farming sections and irrigation projects.

The transition zones indicate where the major production areas overlap. They portray competition between wheat and corn in Nebraska, North Dakota, and South Dakota; wheat and grass in North Dakota, Montana, and Nebraska; and corn and grass in Nebraska, at the fringes of the sandhills.

Significance of Production Areas

As the production possibilities of the major production areas differ in kind and in degree, it seems unreasonable to expect uniform changes in these three areas in response to emergency demands for increased production. Each area should be expected to respond according to its production advantages if maladjustments during the war period are to be minimized. For example, much of the increase desired in hog marketings should be expected to come from the corn area which produces 72 percent of the pork

produced in the Northern Plains (table 3). The corn area produces 82 percent of the corn, 72 percent of the pork, and 42 percent of the beef and veal in the Northern Plains. The wheat area produces 70 percent of the wheat, 89 percent of the flax; over half of the oats, barley and rye; 42 percent of the milk; and over half of the turkey meat. The range area produces over half of the sheep and wool, and 28 percent of the beef and veal.

The adjustments required in these areas from the long-term standpoint likewise differ in kind and degree (table 4). Thus, although some reduction in cropland may be required in all of them, the degree of change should be least in the corn area and greatest in the grass area. The same differences apply to adjustments in size and type of operating units. Furthermore, operators in the grass area are primarily concerned with adjustment in cattle and sheep numbers to the carrying capacity of the range and winter feed supplies. Operators in the wheat area face the problem of reducing the emphasis upon wheat by increasing the acreage of suitable feed grains with corresponding increases in supplementary livestock enterprises. In the corn area, operators must seek ways and means for decreasing the emphasis upon corn, with correspondingly increased emphasis on pastures and roughage-consuming livestock.

Table 3.- Relative importance of the three major production areas in the Northern Great Plains

Item	Unit	Proportion of 1939 production 1/		
		Grass area	Wheat area	Corn area
		Percent	Percent	Percent
Number of farms	Number	15	40	45
All land in farms	Acre	40	37	23
Land in pasture 2/	do.	58	27	15
Cropland	do.	15	52	33
Corn	Bushel	4	14	82
Oats	do.	6	55	39
Barley	do.	7	57	36
Hay	Ton	28	46	26
Wheat	Bushel	12	70	18
Flax	do.	2	89	9
Rye	do.	6	59	35
Beef and veal	Pound	28	30	42
Pork	do.	5	23	72
Lamb and mutton	do.	55	29	16
Chicken meat	do.	10	26	64
Turkey meat	do.	18	55	27
Total meat production	do.	22	28	50
Milk production	Gallon	12	42	46
Egg production	Dozen	10	26	64
Wool	Pound	61	31	8

1/ Production of each item in the Northern Great Plains in 1939 equals 100 percent.

2/ Acres of land in farms less land in crops.

Table 4.- Long-term desirable changes in acreage and numbers of livestock by major production areas, Northern Great Plains

Item	Unit	Percentage of change from 1939		
		Grass area	Wheat area	Corn area
		Percent	Percent	Percent
Number of farms	Number	-20	-11	-20
Cropland 1/	Acre	-19	-11	- 9
Pasture	do.	3	14	14
Cows and heifers	Number	30	19	28
Sheep	do.	2	13	15
Sows and gilts	do.	72	61	2/ 81
Hay	Acre	3	3	35
Wheat	do.	-5	3/ 6	- 1
Corn	do.	3	0	- 3
Oats	do.	3	6	-23
Barley	do.	7	22	- 1
Flax	do.	-4	6	-39

1/ Reductions to result from regrassing.

2/ Though this represents an increase over hog numbers in 1939, the increased numbers of hogs would still be lower than the pre-drought normal.

3/ Although this represents an increase over 1939, the desirable acreage would still be much below that of 1930.

THE GRASS AREA

The grass area comprises eastern Montana, eastern Wyoming, the southwestern part of North Dakota, western South Dakota, and the northwestern part of Nebraska (fig. 2). Throughout the grass area variations in soil, topography, and climate are extreme. Type of soil varies from heavy gumbo soils of eastern Montana and the western Dakotas, to pure sand in the Nebraska sandhills. Topography varies from gently rolling to extremely rough, and the average rainfall varies from 12 inches in the northern part to 20 inches in the sandhills. The climate is extremely changeable.

This area is primarily devoted to livestock production. However, stock ranching, stock farming, dry farming and irrigated farming are found in varying combinations throughout the area. Dry farming and irrigated farming are scattered throughout the area, irrigation along the major rivers and dry farming on the benches or table lands. There were 48,000 operating units in the area in 1939. The average size was 1,500 acres, of which 228 acres (15 percent) was cropland. Cattle form the most important class of livestock; sheep second. In 1939, hay occupied 41 percent and wheat 26 percent of the cropland harvested.

In the Milk River grazing area irrigated farming is found largely on the Milk River project; dry farming in the northern and eastern part; and ranching in the southern half of the area. The operating units are somewhat smaller than the average for the grass area, but a larger percentage of the land is plowed. Wheat is the most important crop, making up 55 percent of the harvested acreage. In this area sheep are almost as important as cattle.

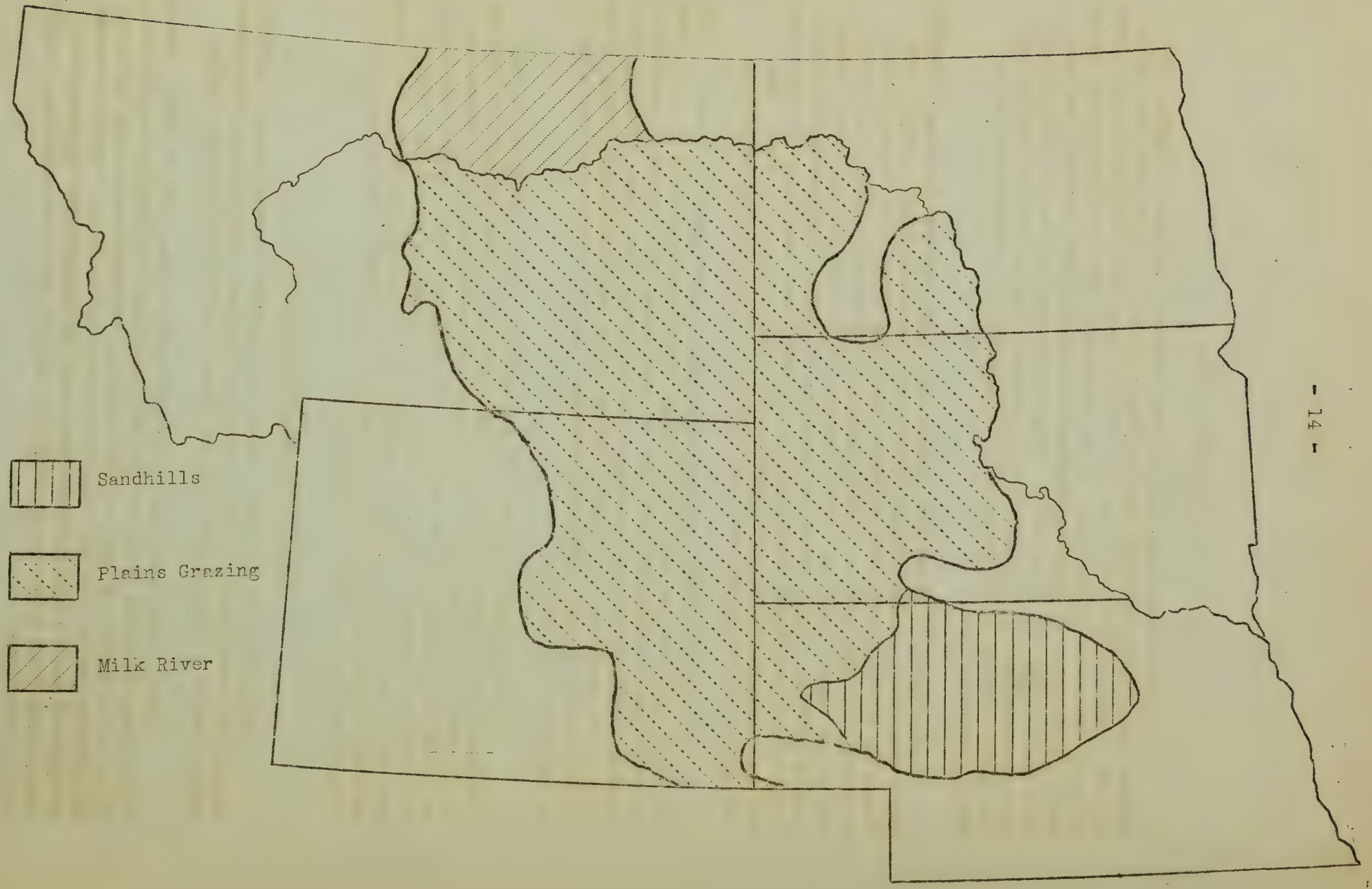
The sandhills in Nebraska constitute a well developed cattle ranching area. Here, because of the sandy soil, cash crops are negligible. Most of the land is in its best use, namely grazing. Operating units in the sandhills are one-fifth larger in acreage than the average for the grass area. The percentage of cropland is about the same as the whole grass area, but 78 percent of it is in hay meadows. The sandy nature of the soil limits the production of sheep. Beef cattle production is the major source of income.

Development of the Grass Area

Historically, the grass area has already passed through several stages of development. Brief consideration must be given to them because they provide a perspective for consideration of the problems today.

First, there was the free-range period from 1870 to 1887, during which grassland was free and large-scale ranching developed extensively. This was a high-risk type of enterprise, extremely vulnerable to mismanagement and to the vagaries of climate and prices. The hard winter of 1886-87 and an increase in homestead settlement gave impetus to a shift away from large-scale ranching towards more conservative, smaller-scale operations.

FIGURE 2 - GRASS AREAS IN THE NORTHERN PLAINS



As settlement developed, ranching was gradually replaced by dry-land farming in a considerable part of the area. The ranching which remained changed considerably in size, type, and operation. The pattern of grazing land was badly broken by intervening farming settlements. Some large range areas were broken up and "open-range" methods could no longer be followed. Many ranchers were forced out of their ranges, others retrenched and operated on a much smaller scale.

Ranges became severely overstocked during high points in the cattle cycle and ranchers were generally short of winter feed. An institutional pattern of roads, schools, and other facilities more suited for an intensive farming and a densely settled area, helped raise taxes to exorbitantly high levels in proportion to the grazing value of the land. The stage was set for a major catastrophe when the decade of drought and depression (1930-40) overtook the country.

Drought and depression brought great hardships to all operators. Many small operators were forced to liquidate. Because of extremely low prices livestock accumulated on farms and ranches between 1930 and 1934. Feed shortage during the subsequent drought forced wholesale liquidation at extremely low prices. Some recovery was evident by 1940 but numbers were still appreciably lower than in 1930.

A great reduction in the number of operating units has taken place since 1930, but there are still many units too small to provide an adequate living for a farm family. Farmers on small units have tended to remain in place because of lack of alternative opportunities. Most of these farmers have received assistance from public agencies in the form of feed and seed loans, rehabilitation loans, or even direct subsistence payments. The cumulative grant payments through March 1941 averaged $36 per farm person for the entire grass area. These average payments were highest, $40, in the Plains Grazing area and lowest, $11, in the Nebraska sandhills.

Adjustments in the Grass Area

Adjustments in the grass area involve many kinds of crops and livestock (table 5). The regrassing of approximately one-fifth of the cropland is one of the major long-term adjustments. Associated with this is an increase in livestock numbers to the carrying capacity of the range and winter feed supplies. Wheat acreage, already materially reduced below the level of 1930, will probably require further reduction in the long run. This adjustment, moderate for the grass area as a whole, requires rather drastic change in the economy of the dry-farming sections where most of the wheat is now produced. Major emphasis should be shifted from wheat to feed crops and livestock. This would require a closer association between the dry-farming sections as sources of feed and the grazing areas which furnish summer grazing.

Table 5. - Estimated adjustments in acreage, numbers of livestock and production in the whole grass area of the Northern Plains

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		49	- 2	-20
Total cropland	Acre	10,947	0	-19
Pasture land	do.	61,124	0	3
All corn	do.	787	17	3
Sorghums	do.	265	5	- 3
Oats threshed	do.	276	8	3
Barley	do.	273	13	7
Rye	do.	112	3	- 1
Flax	do.	13	0	- 4
All wheat	do.	1,661	7	- 5
All hay	do.	2,845	2	3
Potatoes	do.	58	19	16
Sugar beets	do.	118	1	- 2
All cows and heifers				
2 years old and over	Number	934	11	30
Kept mainly for milk	do.	200	5	10
Sows and gilts to farrow	do.	43	60	72
Ewes over 6 months old	do.	3,199	12	2
Chickens raised	do.	4,476	28	33
Total meat production	Pound	795,181	16	26
Milk production	Gallon	81,994	5	20
Egg production	Dozen	14,015	33	30

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

These changes involve less intensive use of land resources than that practiced during the last 25 years.

The adjustments expected during the war emergency are largely in the right direction for other purposes, but most of them will not go so far as seems desirable from the long-term standpoint. The most important adjustment, regrassing of poor quality cropland, is not likely to make any progress unless more positive action is taken to encourage it.

Number of farms.- A decrease of 2 percent in number of farms is expected during the emergency defense period. This compares with a long-time desirable decrease of 20 percent, the greatest change being needed in the Milk River area and the least in the Nebraska sandhills (tables 6, 7, and 8). The increased industrial activity of the defense emergency may relieve the pressure of population upon land and thereby provide an opportunity for combining ranches and farms that are now too small to provide an adequate living for a farm living. Credit agencies can facilitate this change through their policy in disposing of land.

Total cropland.- No change is expected in the total cropland during the defense period. However, for the long-time point of view, a regrassing of 19 percent of the cropland is desirable (table 5). This would increase pasture acreage 3 percent, the increase being relatively greatest in the Milk River area (tables 6, 7, and 8).

Regrassing of idle land should be encouraged by all possible means. From the emergency standpoint (1943-45) more pasture is needed to supply grazing needs of expanding livestock herds (both sheep and cattle). Grazing resources were reasonably adequate for numbers of livestock in 1939, but they would not be enough as herds expand. It is therefore desirable to encourage reseeding of idle lands and excess cropland in order that new plantings of grass may help to carry the larger numbers of livestock expected during the national defense emergency.

It is also desirable for the long term because most of the land which was idle in 1939 is physically unsuited to cultivation because of excessive slopes and erosion. Some of the idle land, although physically fit for cultivation, is so low in productivity that it cannot be profitably cultivated in view of the limited demand for wheat.

Dry-land farmers who formerly depended largely on the income from wheat should be assisted in shifting toward a livestock and feed-crop economy. This requires enlargement of small units through addition of grazing lands or provision for grazing rights within grazing reserves. Governmental agencies in charge of grazing reserves, local governmental units in charge of publicly owned land, and credit agencies having land for lease or for sale are in a position to facilitate this adjustment. While the adjustment in types of farms should proceed with proper caution, as much change as possible should be made during the emergency period.

Table 6. - Estimated adjustments in acreage, numbers of livestock and production in the Milk River portion of the grass area

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		3	0	-25
Total cropland	Acre	952	0	-25
Pasture land	do.	3,302	0	7
All corn	do.	9	15	3
Sorghums	do.	2/	0	0
Oats threshed	do.	34	10	11
Barley	do.	6	10	21
Rye	do.	6	10	1
Flax	do.	8	0	- 6
All wheat	do.	245	-12	- 7
All hay	do.	116	0	4
Potatoes	do.	1	0	- 5
Sugar beets	do.	7	0	-10
All cows and heifers				
2 years old and over	Number	37	20	88
Kept mainly for milk	do.	8	10	20
Sows and gilts to farrow	do.	2	90	79
Ewes over 6 months old	do.	323	22	8
Chickens raised	do.	225	100	78
Total meat production	Pound	41,421	26	53
Milk production	Gallon	3,644	10	19
Egg production	Dozen	924	100	78

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

2/ Less than 0.5.

Table 7. - Estimated adjustments in acreage, numbers of livestock and production in the Plains grazing portion of the grass area

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		41	- 2	-21
Total cropland	Acre	8,601	0	-21
Pasture land	do.	50,793	0	4
All corn	do.	623	21	3
Sorghums	do.	227	6	- 3
Oats threshed	do.	221	8	3
Barley	do.	259	13	7
Rye	do.	60	4	- 3
Flax	do.	5	1	- 1
All wheat	do.	1,410	11	- 5
All hay	do.	1,757	4	4
Potatoes	do.	55	20	17
Sugar beets	do.	111	1	- 1
All cows and heifers 2 years old and over	Number	681	13	33
Kept mainly for milk	do.	165	6	10
Sows and gilts to farrow	do.	55	59	73
Ewes over 6 months old	do.	2,860	11	1
Chickens raised	do.	3,757	27	33
Total meat production	Pound	620,395	17	27
Milk production	Gallon	67,166	6	22
Egg production	Dozen	12,428	30	28

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

Table 8. - Estimated adjustments in acreage, numbers of livestock and production in the Nebraska Sandhills

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		4	0	- 5
Total cropland	Acre	1,394	0	- 5
Pasture land	do.	7,029	0	1
All corn	do.	155	3	3
Sorghums	do.	38	0	0
Oats threshed	do.	20	0	0
Barley	do.	8	0	0
Rye	do.	46	0	0
Flax	do.	-	-	-
All wheat	do.	5	3	3
All hay	do.	972	0	0
Potatoes	do.	1	0	0
Sugar beets	do.	2/	0	0
All cows and heifers				
2 years old and over	Number	217	4	11
Kept mainly for milk	do.	28	0	8
Sows and gilts to farrow	do.	7	50	50
Ewes over 6 months old	do.	15	0	- 3
Chickens raised	do.	494	0	11
Total meat production	Pound	133,365	7	13
Milk production	Gallon	11,184	0	10
Egg production	Dozen	663	0	11

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

2/ Less than 0.5.

Cattle and sheep.- All cows and heifers are expected to increase 11 percent in the area as a whole (table 5), the largest increase (20 percent) being in the Milk River area and the smallest (4 percent) in the Nebraska sandhills (tables 6, 7, and 8).

From the long-term standpoint, however, an increase of 30 percent in number of cows and heifers is desirable (table 5), if the regrassing program is carried out. The desirable expansion varies from 88 percent in the Milk River area to 11 percent in the Nebraska sandhills (tables 6, 7, and 8). In estimating the numbers of cattle desirable from the long-term standpoint, the numbers in each area in 1929 and 1934, the carrying capacity of the range, and the increase in pasture which would result from regrassing, were all taken into consideration. The 30-percent increase recommended would raise cattle numbers to a point slightly above the average of the past 30 years. An increase is justified by the recommended increase in pasture and feed crops.

Sheep are expected to increase 12 percent in the grass area during the war emergency (table 5). The biggest percentage increase will be 22 percent in the Milk River portion. No change is expected in the sandhills (tables 6, 7, and 8). These increases in sheep are more than would be desirable from the long-time point of view. In the recovery from the drought, sheep increased faster than cattle. Sheep numbers were at or near an all time high in 1939. Sheep may increase during the emergency period, but it is likely that they will recede during the long term to a point approximately 2 percent greater than 1939.

With relatively high prices, prospects for a continued good demand, easy credit, and excellent range conditions there is a grave danger in some localities of an excessive expansion of livestock numbers during the emergency period -- an expansion that will endanger both livestock goals and the range. In such localities, a closer culling of herds and the sale of old dry fat cows and off-type cows of all ages at the current high prices for slaughter cattle would enable ranchers to (1) meet marketing goals, (2) liquidate indebtedness, (3) bring herds more nearly in line with normal grazing capacities, (4) maintain larger feed reserves, and (5) prepare for a low price cycle by creating young, good type, high production herds which can grow through a period of low prices.

An increased production of hay and heavier winter feeding would tend to retard overgrazing of winter ranges, but pressure for overgrazing should be resisted on all ranges. A desirable balance between livestock numbers and feed can be encouraged by the range conservation program; a continuation of grazing controls by the Forest Service, the Grazing Service, and State grazing associations; and a conservative loan policy by credit agencies.

Local governmental units and private land owners should discourage exploitation of the range. Discretion in leasing of both public and private lands would be helpful.

Minor livestock.- Expected increases in hogs and chickens, which seem extreme, represent a recovery towards the pre-drought level. These enterprises are important on irrigated farms, though relatively unimportant for the grass area as a whole. With the return of better climatic conditions they will mean more on the dry land farms (tables 6, 7, and 8).

Wheat.- Wheat acreage seeded during the emergency is expected to equal the allotment for 1942. Compared with 1939 this represents a slight decline in the Milk River area and an increase in the other grazing areas (tables 6, 7, and 8). The 1942 wheat acreage allotment is much lower than the acreage seeded in 1930. This is in harmony with the desirable adjustments in the grass area. From the long-term standpoint, wheat acreage in the grass area should be decreased 5 percent below the 1939 acreage. The greatest decrease should be made in portions of the area having the least advantage in the production of wheat.

In view of general shortage of winter feed throughout the area feed crops should be substituted for "cash" wheat wherever this change is feasible. Crop-livestock combination farming, where workable, is preferable to the prevailing systems of specialized crop farming and ranching. The combination should be particularly desirable in the transition zone between ranching and farming areas.

Feed crops.- Acreage of hay is expected to increase moderately during the emergency period. From the long-time standpoint, an increase of 3 or 4 percent is desirable, except in the Nebraska sandhills where hay supplies are generally sufficient (tables, 6, 7, and 8). In order to provide roughage for the increased livestock numbers, water facilities should be developed wherever feasible. This includes irrigation of hay meadows by flooding or other means. The water facilities program now sponsored by the Government should furnish a means for effecting these adjustments.

Oats, barley, and corn are expected to increase somewhat (a trend back to pre-drought normal). Farmers on irrigated land, and in dry-farming sections should be encouraged to increase the acreage of feed crops. With the continued help of AAA feed-crop-grazing relationships should be further developed between farming sections (both irrigated and dry) and range lands.

Suggestions for Promoting Desirable Adjustments

(1) Operators in the area should be encouraged to market a normal proportion of their livestock increases, thus providing beef and mutton required for the war emergency, and also preventing expansion of livestock numbers beyond the carrying capacity of the range and the supply of winter feed. Strict culling of herds is particularly desirable during the emergency.

(2) Strict enforcement of grazing regulations on grazing reserves and a continuance of the range conservation program should tend to curb an excessive expansion of livestock numbers. Range practice payments of the AAA provide an effective means whereby livestock numbers can be balanced with range and feed supplies on privately owned lands. Local Government units and private land owners are in position to discourage the exploitation of the range by nomad flocks of sheep or herds of cattle.

(3) Credit agencies, both public and private, should adhere to conservative loan policies as a means of retarding overexpansion of livestock numbers.

(4) Regrassing of idle land should be given further encouragement under the provisions of the AAA and other federal programs. This applies particularly in and around the farming sections in northern Montana and the hardland grazing area.

(5) Water facilities that will permit the irrigation of hay meadows by flooding or other means and thus increase the production of hay for winter feeding should be developed wherever feasible.

(6) Farmers on irrigated land and in dry-farming sections should be encouraged in order to increase the acreage of feed crops.

(7) Throughout the range area there should be more coordination between irrigated and dry lands, a feed and grazing relationship should be developed between the farming sections (dry and irrigated) and the grass range. Ample feed reserves should be carried on ranches to avoid the necessity of liquidating livestock during short periods of limited range forage production.

(8) In some portions of the area, where wheat production is the best alternative, but still a hazardous enterprise, it may be desirable to develop a "combination" type of operating unit, with wheat, feed crops, and livestock. When wheat prices are low, wheat could be fed to livestock. When grain crops fail, wheat could be harvested for hay and some livestock could be carried over on feed reserves.

(9) Operators of units that are too small to provide a living for the farm family should be encouraged to seek employment in defense industries. Credit agencies should adjust their loan policies to favor the maintenance of more efficient operating units and to discourage reoccupation of small units vacated by those who fail.

(10) The pattern of population settlement should be adjusted in relation to the long-time production possibilities. This would facilitate the functioning of institutional services, such as schools, churches, and roads. More concentrated farm settlement, including farmstead locations along river valleys, would aid in providing improved institutional services at lower costs.

THE WHEAT AREA

The wheat area of the Northern Plains comprises the spring wheat sections of North and South Dakota and northeastern Montana, the "triangle" of Montana, the winter wheat portion of southwestern Nebraska, and the corn-wheat transition zone (fig. 3). Because of differences in production possibilities from east to west the wheat area in the Dakotas is divided into three subdivisions, wheat belt proper, first fringe, and second fringe. The latter extends into northeastern Montana. The areas differ primarily in soil, topography, and climatic hazards, with significant differences in systems of farming. These differences must be recognized when considering agricultural adjustments in the wheat area.

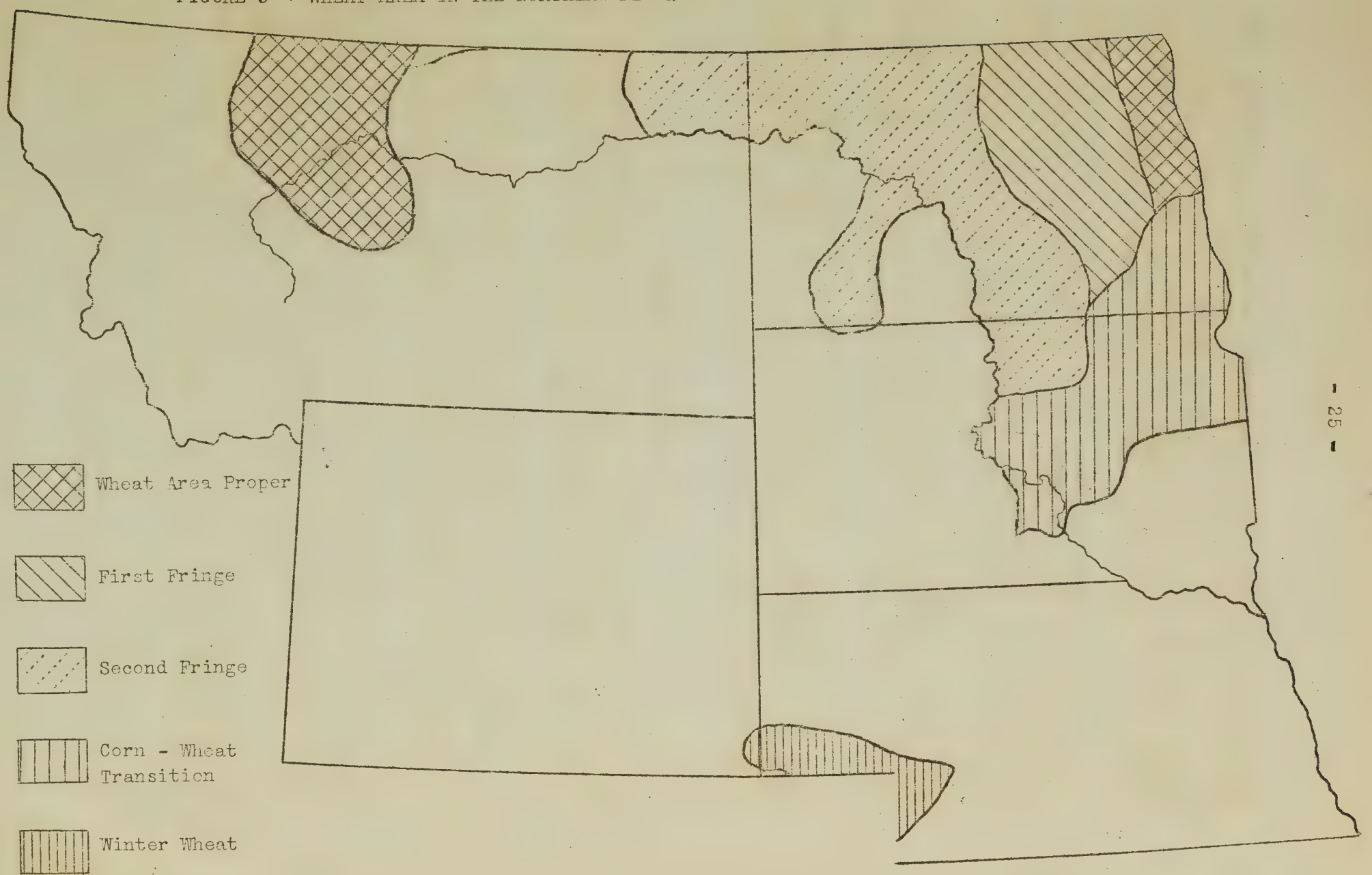
Farming conditions in the wheat belt proper are very stable. Complete crop failures are practically unheard of and low yields, resulting from drought, are very uncommon. Government grants have been relatively low. This area is in the Red River Valley in North Dakota, and is very similar to the part of Minnesota lying directly to the east. Level topography and rich black soil predominate. Important cash crops are wheat, potatoes, and flax. Barley, oats, and corn are the important feed grains. Farm herds of milk cows constitute the principal livestock enterprise on most farms. Hogs and sheep are relatively unimportant.

The first fringe links the stable wheat belt proper and the high-risk second fringe. It is characterized by undulating topography and by less productive soil and greater climatic hazards than is the wheat belt proper. Wheat is the crop of major importance with more emphasis upon oats and barley than in the wheat b elt proper. The farms are larger and there is more pasture land than in the area to the east. The farm herd of milk cows is the most important livestock enterprise with sheep in second place. Poultry and hogs are very minor.

The second fringe is the transition zone between grass and wheat. It is characterized by undulating to rolling and rough topography. The soil is less productive than that in the first fringe. Here rainfall is extremely uncertain and average crop yields are low. It is an area in which much pasture land was broken during the prosperous days of the first World War. Much of it was undesirable as cropland and has since been the cause of considerable distress. Wheat is the major crop; less emphasis is placed upon other small grains. Corn is minor in the north, but it increases slightly in importance toward the south. Dual-purpose cattle constitute the principal livestock enterprise on most farms. There are some sheep but very few hogs in the area, although more are found toward the southern part.

The "triangle" area and the winter wheat section in Nebraska are both predominately wheat producing areas. Topography of the "triangle" ranges from broad prairies to small mountains. Large drainage courses dissect the area. Irrigation from these streams is of considerable

FIGURE 3 - WHEAT AREA IN THE NORTHERN PLAINS



importance. Near the slopes of mountains and stream courses are areas of rough grazing land. The soil varies in texture and fertility and ranges from dark silt loams to sandy or gravelly areas and gumboes. Some of the area is suitable only for grazing, yet there are large tracts of level or slightly rolling bench land which are well adapted to dry land cropping. Summer fallowing is a standard practice.

The winter wheat section is an area of broad level plains with gently rolling hills. The level table land is dissected by several streams which have worn fairly wide valleys. The soils are relatively light textured and fairly uniform throughout the area. Narrow strips of rough stony and gravelly land, lying between the valleys and the table land, are used mostly for pasture. Summer fallowing a high percentage of the wheat land is a standard practice in both areas. Other small grains are being produced to a greater extent since the advent of the wheat control program. Several milk cows, a few hogs, and a small flock of poultry make up the livestock on the majority of farms.

The corn-wheat transition zone marks the meeting ground between corn and spring wheat. Wheat predominates in the north, gradually giving way to more corn and livestock toward the south. Dual-purpose cattle and hogs are the principal livestock. Hogs are most important in the southern portion.

Historical Development

The powerful influence of free land on the frontier, under the Homestead Act, was largely responsible for settlement of the wheat area. It was stimulated and directed by such forces as favorable markets and development of rail transportation.

There was much speculation in land with attendant abuses in its development. Then, the holdings permitted under the Homestead Acts were so small as to stimulate overcultivation in the areas west of the Red River Valley. Both factors tended to induce a more intensive use of land than was justified by natural conditions.

Prominent among the factors influencing settlement of the western areas were periods of relatively abundant rainfall. In many parts of the wheat area, peak years in homesteading occurred at a time when rainfall was the heaviest on record. Moreover, the outbreak of World War I gave added impetus to overdevelopment. Wheat had been selling for 65 to 85 cents a bushel; it suddenly tripled in value. About this time, machinery companies offered tractors and other power machinery designed to speed up farm operations, particularly on large farms. Tractors and complementary equipment were bought largely on credit.

Few men understood the uncertainties connected with farming this new frontier during the period of early settlement. Important among the uncertainties was the matter of soil productivity. It was assumed that if a particular piece of land produced a good yield of wheat, nearby sections would do likewise. This might have been true in years of abundant rainfall, but in dry years, differences in water-absorbing and water-holding capacities resulted in wide variations in yields. During one of these dry periods in the 90's, there was much shifting of population, and numerous homesteads were abandoned in the drier portions of the area.

Recent past.- Outstanding changes have taken place in this part of the Great Plains during the past decade. The greatest adjustment in numbers of farms occurred in the second fringe of the wheat area, where numbers declined from 43,678 in 1929 to 40,373 in 1939, or roughly 8 percent. Total population decreased 9 percent. The average size of farm increased 30 acres per farm from 568 acres to 598 acres. These shifts indicate that some painful adjustments have been made to compensate for overexpansion during the settlement period.

Significant, also, was the increase in idle cropland during the 10-year period, 1929 to 1939. According to the 1940 Census there were about 13,000,000 acres of land in the wheat area classified as idle and fallow. It is estimated that the idle land amounted to 17 percent of the total acreage of cropland, whereas only 2.5 percent of the cropland was idle in 1929.

Acreages of grain crops declined significantly from 1929 to 1939. This was particularly true of wheat and the principal feed crops in the second fringe of the wheat area where wheat acreage declined from 6,000,000 to roughly 4,000,000 acres. Oats acreage decreased from about 650,000 to 550,000 acres and barley from about 1,000,000 acres to about 500,000 acres. Relatively smaller decreases occurred in the first fringe and in the wheat belt proper.

Livestock numbers were severely depleted in the entire wheat area, principally because of a shortage of feed resulting from drought. Hog numbers were cut most drastically, ranging from a decrease of 18 percent in the wheat belt proper to 50 percent in the first fringe and 60 percent in the second fringe. The hog reduction was 54 percent in the winter wheat belt in Nebraska, and 43 percent in the "triangle area" in Montana. Cattle numbers decreased 30 percent in the "triangle area," 25 percent in the second fringe, 12 percent in the first fringe, 8 percent in the wheat belt proper, and increased 2 percent in the winter wheat area in Nebraska.

In view of the decreases that have taken place in crop acreages and livestock numbers, and the prospects of more favorable growing conditions, the wheat area is capable of increasing its production considerably above the 1939 level. But, in spite of the strong demand for livestock and feed crops during the war emergency, the most difficult

economic problem of the wheat area is to find alternative uses for land formerly planted to wheat.

Adjustments in the Wheat Area

The short-term outlook for wheat is not encouraging. Surplus stocks are at record levels and export markets have virtually disappeared. Acreage allotments have been reduced and wheat farmers are sorely in need of production alternatives.

From the longer-time standpoint there may be a possibility of slightly larger exports following the war and during the reconstruction period. However, wheat might be produced for livestock feed in areas where wheat will produce more feed per acre than other feed grains. It is anticipated that the demand for livestock and livestock products will be relatively more favorable than for wheat.

Wherever possible the short-term shift should be into those commodities for which there is a strong prospective demand, namely, livestock, livestock products, and feed crops. Crops and livestock suffered severe setbacks during the past decade of drought and low prices. Consequently, significant increases are possible in both before equaling the 1930 levels. It is possible to expand production sufficiently to meet food goals without losing gains already made in agricultural conservation. Overexpansion can be largely avoided by a careful consideration of the natural and economic advantages in each subdivision of the wheat area.

The direction of changes expected during the emergency period is largely in harmony with desirable long-term adjustments. However, the magnitude of change may be inadequate in some cases and excessive in others.

Regrassing cropland.- The total acreage of cropland is not expected to show any appreciable change during the war emergency. For the long-term period it is desirable to regrass 11 percent of the cropland reported in 1939 in the wheat area, 3 percent in the wheat belt proper, 8 percent in the first fringe, 17 percent in the second fringe, 3 percent in the winter wheat area, and 11 percent in the "triangle" (tables 9, 10, 11, 12, and 13).

It is not expected that much regrassing of poorer plowland will take place during the emergency period, although from the long-term point of view this practice is highly desirable in all parts of the wheat area. The greatest extent of regrassing should take place in the second fringe where considerable overexpansion in cropland has occurred.

Regrassing should be specifically encouraged by governmental programs in the outer fringes, where crop farming is especially hazardous. Encouragement could be given by furnishing operators more information on desirable grasses and methods of seeding "go-back" land.

Table 9. - Estimated adjustments in acreage, numbers of livestock and production in the wheat belt proper

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		8	0	0
Pasture land	Acre	550	0	13
Total cropland	do.	2,328	0	- 3
All corn	do.	80	10	10
All wheat	do.	717	- 7	0
Oats threshed	do.	154	2	32
Barley	do.	369	4	8
Rye	do.	19	0	0
Flax	do.	63	14	32
All hay	do.	234	0	0
Legume hay	do.	61	0	0
Potatoes	do.	101	13	26
All cows and heifers 2 years old and over	Number	52	10	10
Kept mainly for milk	do.	45	9	11
Sows and gilts to farrow	do.	11	18	82
Ewes over 6 months old	do.	69	22	39
Chickens raised	do.	695	13	13
Total meat production	Pound	51,840	13	33
Milk production	Gallon	22,051	20	11
Egg production	Dozen	2,325	6	6

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

Table 10. - Estimated adjustments in acreage, numbers of livestock and production in the first fringe of the wheat area

Item	Unit	1939 1/	Percentate change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		20	0	-10
Pasture land	Acre	2,839	0	20
Total cropland	do.	7,151	0	- 8
All corn	do.	217	13	13
All wheat	do.	2,146	1	8
Oats threshed	do.	494	2	2
Barley	do.	534	27	45
Rye	do.	283	0	0
Flax	do.	70	27	27
All hay	do.	880	0	0
Legume hay	do.	133	0	0
All cows and heifers 2 years old and over	Number	171	8	13
Kept mainly for milk	do.	151	9	22
Sows and gilts to farrow	do.	26	23	100
Ewes over 6 months old	do.	251	19	0
Chickens raised	do.	1,680	13	25
Total meat production	Pound	155,932	13	31
Milk production	Gallon	65,573	20	34
Egg production	Dozen	5,345	6	28

1/ Taken from 1940 U. S. Census, adjusted for estimated normal abandonment.

Table 11. - Estimated adjustments in acreage, numbers of livestock and production in the second fringe of the wheat area

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		40	0	-15
Pasture land	Acre	23,759	0	20
Total cropland	do.	12,904	0	-17
All corn	do.	472	17	4
All wheat	do.	3,871	- 8	7
Oats threshed	do.	527	9	24
Barley	do.	517	14	35
Rye	do.	342	10	- 2
Flax	do.	99	15	4
All hay	do.	1,449	6	2
Legume hay	do.	168	0	2
All cows and heifers 2 years old and over	Number	337	8	26
Kept mainly for milk	do.	261	8	8
Sows and gilts to farrow	do.	55	22	16
Ewes over 6 months old	do.	381	25	18
Chickens raised	do.	3,462	12	35
Total meat production	Pound	303,168	13	20
Milk production	Gallon	100,059	19	11
Egg production	Dozen	10,033	7	160

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

Table 12. - Estimated adjustments in acreage, numbers of livestock and production in the triangle area in Montana

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		9	0	-11
Pasture land	Acre	7,543	0	5
Total cropland	do.	3,550	0	-11
All corn	do.	8	13	13
All wheat	do.	1,296	- 9	4
Oats threshed	do.	53	9	0
Barley	do.	47	11	0
Rye	do.	3	33	33
Flax	do.	25	0	0
All hay	do.	272	0	45
Legume hay	do.	132	0	0
All cows and heifers				
2 years old and over	Number	96	18	25
Kept mainly for milk	do.	26	12	35
Sows and gilts to farrow	do.	5	60	80
Ewes over 6 months old	do.	484	16	11
Chickens raised	do.	809	0	13
Total meat production	Pound	91,883	18	25
Milk production	Gallon	12,273	0	30
Egg production	Dozen	2,999	0	83

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

Table 13. - Estimated adjustments in acreage, numbers of livestock and production in the winter wheat area of southwest Nebraska

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		5	0	-20
Pasture land	Acre	1,813	0	3
Total cropland	do.	2,011	0	- 3
All corn	do.	328	13	- 4
All wheat	do.	621	-10	6
Oats threshed	do.	23	0	0
Barley	do.	66	5	- 2
Rye	do.	26	0	- 8
Flax	do.	0	0	0
All hay	do.	77	0	27
Legume hay	do.	8	0	38
All cows and heifers 2 years old and over	Number	56	0	20
Kept mainly for milk	do.	21	0	0
Sows and gilts to farrow	do.	8	87	-25
Ewes over 6 months old	do.	33	6	6
Chickens raised	do.	720	7	39
Total meat production	Pound	47,180	19	13
Milk production	Gallon	9,448	0	0
Egg production	Dozen	2,304	7	7

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

Number of farms.- Although the number of farms is not expected to change during the war period, a reduction of 11 percent is desirable in the long term for the wheat area as a whole (table 14). This adjustment would eliminate 14,000 farms, thereby increasing the average size from about 520 acres to about 585 acres. Adjustments in size might be made by combining small farming units, the income from which is insufficient for family support. The greatest decrease in the number of farms (15 percent) should take place in the second fringe (table 11). This means a decrease of about 6,000 operators -- an adjustment long needed to correct the overexpansion of the first World War period (table 11). The change would harmonize with a retirement of cropland to grass and an increase in livestock numbers. No change in the number of farms seems desirable in the wheat belt proper, where rainfall is more certain and the farming pattern is more nearly mature (table 9). The 20-percent decrease suggested in the winter wheat area means a reduction of 1,000 farms from an area comprising 3,824,000 acres of land in farms. In general, the decrease recommended in number of farms increases from east to west and with the degree of risk in farming. Fewer and consequently larger farms are needed in these high-risk areas because less emphasis should be placed upon cash crops and more upon feed crops and livestock.

Every encouragement should be given farmers to move to areas of industrial opportunity in the emergency period. Movement of stranded farm population from villages and cities to industrial openings in other areas also should be encouraged in order to relieve pressure on farms. Credit policies should be revised to facilitate shifts in the direction of enlarging farms up to a size that will adequately support a farm family.

Cash crops.- Seeded acreages of wheat during the emergency war period is expected to equal the 1942 acreage allotments established by government programs. Compared with 1939 this means a 5 percent decrease in the whole wheat area (table 14).3/ Considerable variation exists between subdivisions, varying from a reduction of 7 percent in the wheat belt proper, 8 percent in the second fringe, 9 percent in the "triangle," and 10 percent in the winter wheat section, to an increase of 1 percent in the first fringe and 3 percent in the corn-wheat transition zone (tables 9, 10, 11, 12, 13, 15). The acreage anticipated is not much below the 1939 acreage but it is materially less than the acreage of 1930.

From the long-run point of view the suggested increase in wheat acreage is 6 percent for the entire wheat area, compared with 1939. In the immediate post-war period there may be some increase in export demand. The greatest increase should come in the first and second fringes where wheat acreage sank to a low level during the drought.

3/ The national allotment for 1942 was roughly 11 percent less than the 1941 allotment.

Table 14. - Estimated adjustments in acreage, numbers of livestock and production in the total wheat area of the Northern Plains

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		126	0	-11
Pasture land	Acre	28,603	0	14
Total cropland	do.	36,704	0	-11
All corn	do.	2,079	13	0
All wheat	do.	10,229	- 5	6
Oats threshed	do.	2,152	9	6
Barley	do.	2,177	17	22
Rye	do.	1,081	3	- 5
Flax	do.	462	17	6
All hay	do.	4,198	2	3
Legume hay	do.	635	0	1
All cows and heifers 2 years old and over	Number	999	10	19
Kept mainly for milk	do.	702	9	14
Sows and gilts to farrow	do.	210	40	61
Ewes over 6 months old	do.	1,675	20	13
Chickens raised	do.	11,111	10	27
Total meat production	Pound	993,931	19	30
Milk production	Gallon	284,482	17	18
Egg production	Dozen	34,618	5	83

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

Table 15. - Estimated adjustments in acreage, numbers of livestock and production in the corn-wheat transition zone of the wheat area

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms		44	0	- 9
Pasture land	Acre	5,003	0	16
Total cropland	do.	8,760	0	- 9
All corn	do.	974	12	0
All wheat	do.	1,578	3	7
Oats threshed	do.	901	15	0
Barley	do.	644	20	7
Rye	do.	406	0	0
Flax	do.	204	18	0
All hay	do.	1,286	0	1
Legume hay	do.	133	2	2
All cows and heifers 2 years old and over	Number	286	12	14
Kept for milk	do.	198	9	13
Sows and gilts to farrow	do.	104	52	81
Ewes over 6 months old	do.	457	22	17
Chickens raised	do.	3,745	9	24
Total meat production	Pound	343,928	28	41
Milk production	Gallon	75,078	16	17
Egg production	Dozen	11,612	5	71

1/ Taken from 1940 U.S. Census, adjusted for estimated normal abandonment.

The suggested increases of 8 and 7 percent, respectively, would not be sufficient to restore acreage to 1930 levels (tables 10, 11). A careful consideration of the long-term production possibilities indicates that it is desirable to allow the maximum acreage of wheat in areas such as the "triangle" and winter wheat areas, where equally profitable production alternatives are not available (tables 12, 13). Arrangements should be made to permit diversion of wheat into feed uses. In some parts of the area wheat will produce as much or more concentrates per acre than other grains.

Rather large percentage increases are expected in flax harvested during the war emergency. However, actual acreage shifts would be small. The greatest increase, 27 percent, is expected in the first fringe (table 10) which is one of the most important flax producing sections in the Great Plains. Other increases expected are 14, 15 and 18 percent in the wheat belt proper, second fringe and corn-wheat transition zone, respectively (tables 9, 11, 15).

The wheat belt proper is the only part of the wheat area in which long-term flax acreage should exceed that of the emergency period. Increases in flax acreages are retarded by the difficulty of growing flax on weed-infested land and a rather poor demand outlook following the emergency period.

The only increase of any consequence expected in harvested potato acreage during the war period is a 13 percent increase over 1939 in the wheat belt proper (table 9). In the long-run, potato acreage should increase about 26 percent above the 1939 level. This is desirable because of the comparative advantage in growing potatoes in this area.

Feed crops.- Higher prices for livestock during the emergency period are the major influence in the increases expected in harvested acreages of feed grains, principally barley and oats. Feed grains are expected to increase 13 percent in the wheat areas as a whole (table 14). Increases range from 17 percent in the corn-wheat transition zone to 3 percent in both the wheat belt proper and the winter wheat section (tables 9, 13, 15).

Changes expected during the war period are less than the long-time desirable adjustments in most areas. Feed crops should be increased considerably more than is expected in both the first and second fringes (tables 10, 11). These are major wheat producing areas, so the adjustment might be expected to be somewhat retarded as compared with an area such as the corn-wheat transition zone where there is less emphasis upon wheat. Changes in farming might be facilitated by positive encouragement of substitution of feed grains for cash crops in the cropping system, or of increases in numbers of roughage-consuming livestock on farms where these adjustments are needed.

Livestock.- The livestock population was considerably lower in 1939 than it was ten years earlier. The greatest decreases took place in the western part of the wheat area where the drought was most severe. Hog numbers declined more than either cattle or sheep.

All livestock are expected to increase during the emergency period, but probably will not increase as much as seems desirable from the long-run standpoint. Sheep are an exception, present numbers being abnormally high.

Cows and heifers are expected to increase 10 percent during the emergency period in the whole wheat area (table 14). The largest part of this increase is expected to be in cows milked. Milk production is expected to increase about 17 percent. Cows and heifers are expected to increase most (18 percent) in the "triangle" area (table 12) largely because the decrease was greater here than in any other area during the period 1930-1940. Other increases expected are 10 percent in the wheat belt proper, 8 percent in the first and second fringes, and 12 percent in the corn-wheat transition zone. No change is expected in the winter wheat area (tables 9, 10, 11, 13, 15). In the long run numbers should increase 19 percent in the entire wheat area (table 14). The greatest increases should occur in the second fringe, where more emphasis should be placed upon roughage-consuming livestock and feed crops, and less upon cash crops (table 11). A larger proportion of this increase should be in beef cattle than is expected during the emergency period.

Sheep numbers will probably increase about 20 percent in the wheat area during the emergency period (table 14). This is 7 percent higher than is considered desirable for the long-term period. Greatest increase is expected in the second fringe where numbers may increase by 25 percent. This is somewhat higher than is desirable (table 11). The only area which should increase more in the long-run is the wheat belt proper (table 9).

Sows and gilts, although of minor importance, are expected to show a marked increase during the next few years. In the wheat area as a whole, numbers are expected to increase 40 percent over 1939 (table 14). Largest adjustments are anticipated in the triangle, the winter wheat area and the corn-wheat transition zone (tables 12, 13, 15). In no case will expected increases in numbers be great enough to equal the pre-drought peak.

Expected changes in livestock numbers will increase total meat production about 19 percent by 1943-45 and 30 percent during the longer-time period (table 14). The corn-wheat transition area will probably show the largest increase in both the emergency and the long-time period (table 15).

Suggested Measures for Encouraging Desirable Adjustments in the Wheat Area

(1) Regrassing of poorer plowland in some areas will probably not take place so rapidly as is desirable during the emergency period. Because many farmers lack adequate information on desirable grasses to seed on "go-back" land, it is suggested that more information be provided on this subject. This regrassing should be encouraged especially in the first and second fringes.

(2) Encourage enlargement of farm units up to sizes that will adequately support the farm family. Credit policies can greatly facilitate this change.

(3) A part of the population now living on farms that are too small, or located in poor land areas, should be encouraged and assisted to find work in defense industries or other industrial activities. Such a move will provide an opportunity for larger farms and higher income per farm family for those who remain in the area.

(4) The shift to more livestock is not expected to take place so rapidly as is desirable during the defense period in most areas. Because breeding stock is held at high prices it will be desirable to grow into livestock rather than to buy large foundation herds. Individual farmers might be compensated for making desirable changes in the organization of their farms; for example, shifting from cash grain to feed crops, increasing the number of cattle, capital investment in buildings, fences, etc.

(5) During this period, land values may rise to dangerously high levels. It is suggested that consideration be given to controlling farm real estate values.

(6) The high degree of mobility of people, which has been characteristic of the wheat area except in the spring-wheat-belt proper, indicates an unsatisfactory adjustment between population and resources. Successful agricultural adjustment that will achieve a better balance between population and land resources will tend to reduce recurring volumes of migration to and from the area.

THE CORN AREA

The corn area occupies roughly the southeastern one-fourth of South Dakota and the eastern one-half and the southwestern part of Nebraska. About 60 percent of the farm land is tilled; 31 percent is occupied by corn. Wheat occupies less than one-half as many acres as corn. In general the area declines in productivity, and the climatic hazards increase from east to west. The major livestock enterprises are pork production, dairy products and meat production from dual-purpose and dairy cow herds, chicken and egg production, and beef production from beef cow herds and feedlot feeding. Pork production is approximately one-third more important than production from the milk cow enterprises, and twice as important as the poultry and beef cattle enterprises. 4/ Sheep production, lamb feeding, and turkey production are the less important enterprises. The area has been divided into three sections: The Corn Belt proper (the extreme eastern part of the corn area), the first fringe (lying west of the Corn Belt proper), and the second fringe (the western part of the corn area). These areas are shown in figure 4.

The Corn Belt proper is the most productive part of the corn area. Seventy-three percent of the farm land is tilled and only 27 percent is in other uses. The average size of farm is 185 acres. Corn is the most important crop occupying 43 percent of the tilled land. Oats and barley use about two-thirds as much land as corn in the northern part of this area. Toward the southern part wheat is a strong competitor with corn. Hay is relatively unimportant. Corn yields have averaged about 30 bushels per acre and wheat 18. Normal abandonment has been about 3 percent and 6 percent respectively for these crops.

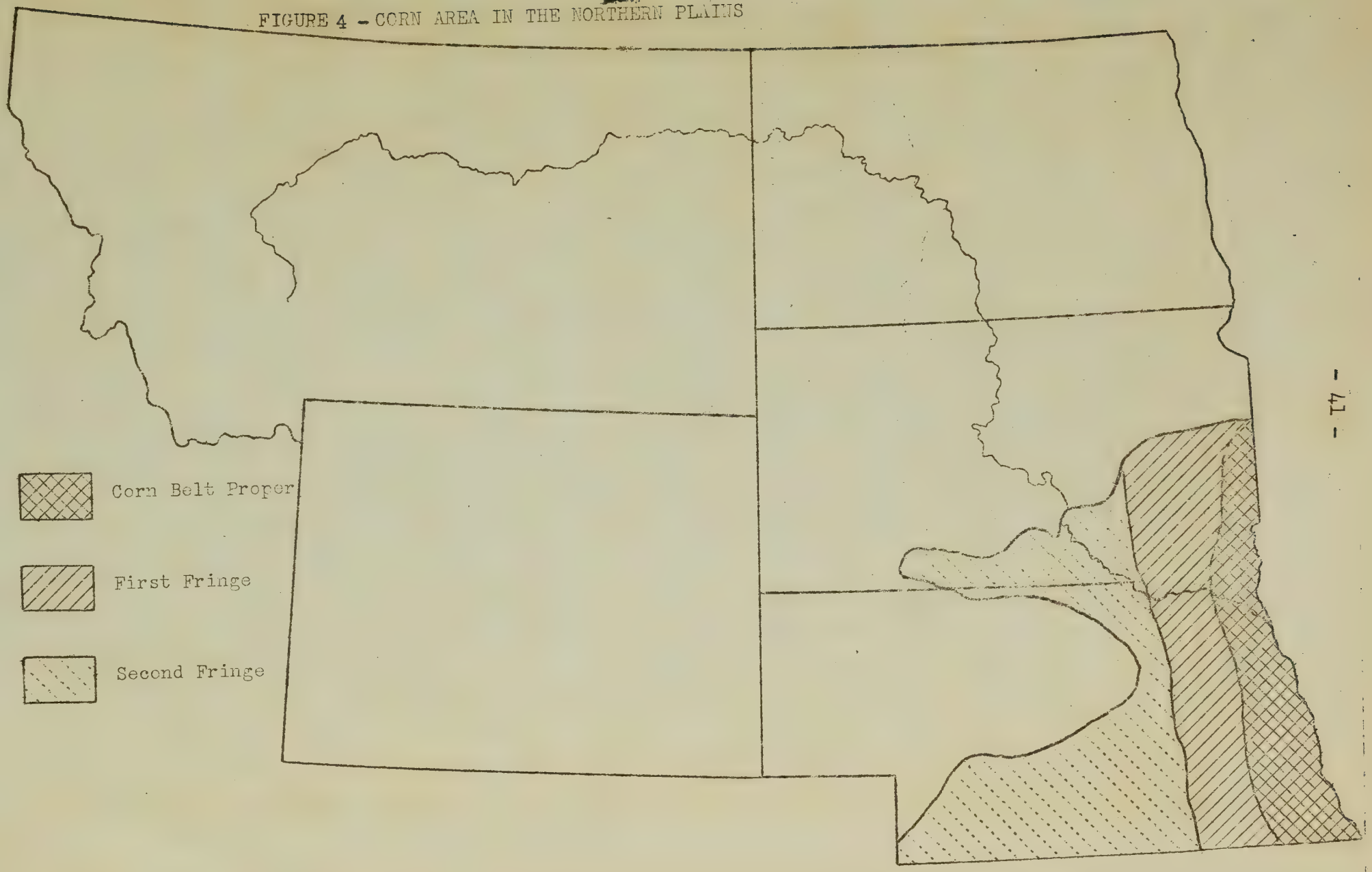
Pork production represents the outstanding livestock enterprise in the Corn Belt proper. Other major enterprises, classified on the basis of gross income, are milk cow, chicken, and beef production. 5/ The fattening of cattle in feedlots is an enterprise which provides a large part of the gross income from beef production. 6/ It is especially significant in the central part of this area. Sheep and turkey production are minor enterprises.

4/ In this classification, milk cow production includes the production of milk and beef from cows kept primarily for milk purposes. Chicken production includes the production of eggs and meat. Beef production includes feedlot feeding, as well as farm-herd production from cows kept mainly for beef purposes.

5/ The relative importance of these livestock enterprises was based upon an adjusted gross income figure for each class of livestock. Gross income was derived by applying expected prices during the 1943-45 defense period to the estimated production figures for 1939.

6/ Basis: the amount of gain in the feedlot.

FIGURE 4 - CORN AREA IN THE NORTHERN PLAINS



A high proportion, (71 percent) of the farm land is also tilled in the first fringe. Farms average 240 acres in size. Only 30 percent of the tilled land is in corn, with the other feed grains occupying three-fourths as many acres in the northern part. Wheat competes with corn in the southern part. Hay acreage is little more important than in the Corn Belt proper, and only about one-fourth of it is legumes. Corn yields have averaged about 25 bushel per acre, and wheat 16.

The same general pattern of livestock production prevails, as in the Corn Belt proper except that milk cows and chickens are relatively more important. During a period of improved climatic conditions, however, hogs increase in importance. Beef production, as a whole, is less important than in the Corn Belt proper, owing to less fattening of feeder cattle in feedlots. Sheep and turkeys are minor enterprises; however, they are relatively more important among other livestock enterprises in the first fringe area than they are in the Corn Belt proper.

Only 47 percent of the second fringe of the Corn Belt is tilled, and 24 percent of the tilled acres are in corn. Farms average 430 acres in size. Grain sorghums have been emphasized recently in the southern part of this area, where wheat is already a strong competitor with corn. Hay is second to corn, occupying 15 percent of the cropland. For the most part, wild hay is produced. Corn yields have averaged about 19 bushel and wheat 13, while abandonment of the two crops has averaged 10 percent and 18 percent, respectively.

Milk cows and hogs represent the two major livestock enterprises. Beef cattle and poultry were also quite important. Milk cow enterprises included production of milk and beef from dual-purpose and dairy herds. Beef production consists primarily of farm-herd and ranch production with little emphasis on fattening feeder cattle. Sheep and turkey production are relatively unimportant, but have increased during recent years.

Recent changes.- The number of farms decreased 27 percent in the second fringe, 6 percent in the first fringe and 3 percent in the Corn Belt proper during the period 1929 to 1939. There was a reduction of about 8 percent in the acres of cropland in the second fringe. Reductions in the first fringe and Corn Belt proper were 3 and 2 percent, respectively. In the second fringe corn and oats became less important, while barley, grain sorghums, and rye gained. The acreage of wheat declined but its position in the cropping system remained the same. The general trend was similar in the first fringe but the amount of change was less significant. In the Corn Belt proper, corn and oats declined in importance, less than in the first fringe, while the importance of wheat, barley, rye, and grain sorghums increased. The acreage of wheat declined but its relative position increased. In the entire area little wheat was produced on fallow land prior to 1932. Since that time fallow has been introduced in the two western fringes as a result of drought conditions and adjustment programs.

Considerable decline in numbers of livestock took place in the corn area during the decade 1930-40. Hog numbers decreased to less than one-half the number in 1930, the greatest decreases taking place in the western part of the corn area. Cattle decreased about 6 percent, chickens about

20 percent, and horse numbers about 40 percent. Sheep numbers increased 50 percent in the corn area as a whole, 89 percent in the second fringe, 41 percent in the first fringe, and 21 percent in the Corn Belt proper.

Distress during the drought period is indicated by cumulative grant payments to persons living on farms. By March 1941 they averaged $31 per person in the second fringe, $27 in the first fringe, and $10 in the Corn Belt proper.

Adjustments in the Corn Area

Livestock production.- Farmers in the corn area of the Northern Plains probably will produce 67 percent more meat, 11 percent more milk, and 23 percent more eggs during the defense period, 1943-45, than was produced in 1939, (table 16). Pork production, the major source of additional meat supply, is expected to be increased 123 percent. Other increases in meat production are: Beef and veal, 23 percent; lamb and mutton, 18 percent; chickens, 23 percent; and turkeys, 29 percent.

The corn area of the Northern Plains may be expected to increase the production of pork more than other kinds of meat because of its opportunity to expand the production of feed grains under more stable climatic conditions, and because of the short production cycle in hogs. These increases in production are in line with defense needs.

The price for dairy products in relation to other prices is not expected to encourage exceptional increases in dairy production in the corn area. During periods of expansion when labor is scarce and when there are chances to make money in other enterprises, there is a tendency to neglect dairy production on general farms. Encouragement of the use of mechanized milk equipment, the construction of efficient housing quarters for milk cows, the saving of young heifers, and extended educational programs relative to the need for dairy products in a well balanced diet would undoubtedly help to bring about a further increase in dairy production.

The increases in livestock production are not expected to be uniform in the three production areas of the corn area (tables 17, 18, 19). Hog production is expected to exceed the 1939 production by 75 percent in the Corn Belt proper, 147 percent in the first fringe, and 176 percent in the second fringe. The greater increase in the fringes represents in part recovery of livestock numbers that were severely depleted during the drought period.

Increases in beef and lamb production are expected as a result of increased feedlot feeding and farm-herd production. The greatest increases in numbers of cattle fed are expected to occur in the Corn Belt proper where most of the feeding has been done in the past. Farm-herd beef production increases are expected to be greatest in the first and second fringes, as are the increases in the production of sheep.

Table 16.- Estimated adjustments in acreage, numbers of livestock and production in total corn area of the Northern Plains

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms	Number	143	- 3	-20
Total cropland	Acre	24,004	0	- 9
Cropland harvested	do.	19,599	4	- 2
All corn	do.	7,402	15	- 3
Sorghums, excluding syrup	do.	1,962	-16	-24
Oats threshed	do.	2,049	-17	-23
Barley	do.	1,729	19	- 1
Rye	do.	610	0	-10
All wheat	do.	2,815	-11	- 1
All hay, excluding sorghum	do.	2,598	13	35
Legume hay 2/	do.	623	54	74
Crop failure	do.	2,299	-15	-24
Cropland idle	do.	1,152	-31	-86
Summer fallow	do.	954	- 9	-39
Pasture 3/	do.	16,331	0	14
Plowable pasture	do.	4,457	0	51
All cows and heifers 2 years old and over	Number	1,208	9	28
Kept mainly for milk	do.	782	7	7
Kept mainly for beef	do.	426	12	67
Feeder cattle purchased	do.	312	44	23
Sows and gilts farrowing	do.	498	123	81
Ewes over 6 months old	do.	470	15	15
Feeder lambs purchased	do.	649	23	17
Chickens	do.	27,952	23	21
Total meat production	Pound	1,792,709	67	53
Milk production	Gallon	305,971	11	11
Egg production	Dozen	86,903	23	23

1/ Taken from 1940 U. S. Census adjusted for estimated normal abandonment, except estimates of feeder cattle and lambs purchased and meat production. The last 3 items were based primarily on statistics of the Agricultural Marketing Service.

2/ Alfalfa, annual legumes, sweetclover.

3/ Pasture has been assumed to be approximately equal to all land in farms that is not in crops.

Table 17.- Estimated adjustments in acreage, numbers of livestock and production in the Corn Belt proper of the Northern Plains

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms	Number	46	- 2	-22
Total cropland	Acre	6,044	0	- 5
Cropland harvested	do.	5,493	2	- 1
All corn	do.	2,576	11	4
Sorghums, excluding syrup	do.	260	-26	-43
Oats threshed	do.	767	-22	-29
Barley	do.	445	17	0
Rye	do.	74	0	- 5
All wheat	do.	708	-23	- 8
All hay, excluding sorghum	do.	536	26	46
Legume hay 2/	do.	277	50	74
Crop failure	do.	194	3	- 3
Cropland idle	do.	239	-29	-81
Summer fallow	do.	118	-36	-79
Pasture 3/	do.	2,278	0	14
Plowable pasture	do.	1,034	0	32
All cows and heifers 2 years old and over	Number	321	8	23
Kept mainly for milk	do.	243	10	10
Kept mainly for beef	do.	78	4	63
Feeder cattle purchased	do.	182	37	24
Sows and gilts farrowing	do.	215	75	62
Ewes over 6 months old	do.	112	6	5
Feeder lambs purchased	do.	318	20	19
Chickens	do.	9,601	25	25
Total meat production	Pound	656,756	52	45
Milk production	Gallon	103,288	15	16
Egg production	Dozen	31,948	25	24

1/ Taken from 1940 U. S. Census adjusted for estimated normal abandonment, except estimates of feeder cattle and lambs purchased and meat production. The last 3 items were based primarily on statistics of the Agricultural Marketing Service.

2/ Alfalfa, annual legumes, sweetclover.

3/ Pasture has been assumed to be approximately equal to all land in farms that is not in crops.

Table 18.- Estimated adjustments in acreage, numbers of livestock and production in the first fringe of the Northern Plains corn area

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms	Number	51	- 2	-16
Total cropland	Acre	8,745	0	- 7
Cropland harvested	do.	7,377	3	- 1
All corn	do.	2,627	16	1
Sorghums, excluding syrup	do.	704	-21	-24
Oats threshed	do.	980	-16	-20
Barley	do.	666	30	3
Rye	do.	311	0	-12
All wheat	do.	1,224	-16	4
All hay, excluding sorghum	do.	676	16	38
Legume hay 2/	do.	189	56	71
Crop failure	do.	671	- 4	-11
Cropland idle	do.	464	-37	-85
Summer fallow	do.	233	-12	-49
Pasture 3/	do.	3,503	0	19
Plowable pasture	do.	1,429	0	45
All cows and heifers 2 years old and over	Number	383	8	27
Kept mainly for milk	do.	286	7	7
Kept mainly for beef	do.	97	11	88
Feeder cattle purchased	do.	69	58	29
Sows and gilts farrowing	do.	177	147	99
Ewes over 6 months old	do.	213	18	18
Feeder lambs purchased	do.	70	21	19
Chickens	do.	10,584	23	23
Total meat production	Pound	597,104	83	64
Milk production	Gallon	108,968	10	10
Egg production	Dozen	31,697	23	23

1/ Taken from 1940 U. S. Census adjusted for estimated normal abandonment, except estimates of feeder cattle and lambs purchased and meat production. The last 3 items were based primarily on statistics of the Agricultural Marketing Service.

2/ Alfalfa, annual legumes, sweetclover.

3/ Pasture has been assumed to be approximately equal to all land in farms that is not in crops.

Table 19.- Estimated adjustments in acreage, numbers of livestock and production in the second fringe of the Northern Plains corn area

Item	Unit	1939 1/	Percentage change from 1939	
			Expected 1943-45	Long-time desirable
		Thousands	Percent	Percent
Number of farms	Number	46	- 4	-22
Total cropland	Acre	9,215	0	-14
Cropland harvested	do.	6,729	7	- 4
All corn	do.	2,199	16	-16
Sorghums, excluding syrup	do.	998	-11	-19
Oats threshed	do.	302	- 8	-20
Barley	do.	618	9	- 5
Rye	do.	225	0	- 9
All wheat	do.	883	7	- 2
All hay, excluding sorghums	do.	1,386	7	29
Legume hay 2/	do.	157	59	80
Crop failure	do.	1,434	-22	-33
Cropland idle	do.	449	-25	-89
Summer fallow	do.	603	- 3	-28
Pasture 3/	do.	10,550	0	12
Plowable pasture	do.	1,994	0	64
All cows and heifers 2 years old and over	Number	504	9	32
Kept mainly for milk	do.	253	4	4
Kept mainly for beef	do.	251	14	61
Feeder cattle purchased	do.	62	45	13
Sows and gilts farrowing	do.	106	176	88
Ewes over 6 months old	do.	146	18	17
Feeder lambs purchased	do.	261	28	13
Chickens	do.	7,767	20	16
Total meat production	Pound	538,849	69	50
Milk production	Gallon	93,715	7	7
Egg production	Dozen	23,258	20	20

1/ Taken from 1940 U. S. Census adjusted for estimated normal abandonment, except estimates of feeder cattle and lambs purchased and meat production. The last 3 items were based primarily on statistics of the Agricultural Marketing Service.

2/ Alfalfa, annual legumes, sweetclover.

3/ Pasture has been assumed to be approximately equal to all land in farms that is not in crops.

The increase in milk production is expected to be 15, 10, and 7 percent in the Corn Belt proper, first fringe, and second fringe, respectively, the greatest increases being expected in the eastern part of the area, where small farms, productive pastures on rolling lands, and easily available markets exist.

Moderate increases in the production of chickens, turkeys, and eggs are expected. These will be slightly greater in the Corn Belt proper and in the first fringe than in the second fringe. Turkey production increases are expected to be greatest in the western fringes.

During the long-term period the desirable increase in meat production in this area amounts to 53 percent over the production in 1939. This is slightly less than the increase of 67 percent that is expected for the emergency period. The adjustment in meat production during the long-term period would come from a reduction in pork. It is considered desirable that beef production be increased, even in excess of production during the emergency period, in order to utilize the increased acreages of plowable pastures which are anticipated. The expected short-term increases in production of dairy, poultry, and sheep products should be maintained unless unfavorable crop years force retrenchment.

In the second fringe area, the northern part of the first fringe, and the southern part of the Corn Belt proper, there are considerable acreages of cropland that should be used for pasture. In other areas larger portions of the cropland should be left in crops. The development of hybrid corn encourages the production of more corn in the Corn Belt proper and first fringe. When these and other factors are appraised it appears that the increases in hogs that are expected to take place in the northern part of the Corn Belt proper during the emergency period, may logically be maintained or even increased during the long-term period. Moderate reductions in hog production would be desirable in the northern part of the first fringe, as would substantial reductions in the remainder of the corn area. However, the numbers of hogs would still remain substantially above numbers in 1939 in most of the area. The expected rise in hog production during the emergency period and the desirable decline in all portions of the corn area after the war, except in the northeastern part, implies that it would be desirable for individual farmers to prepare only for short-term investments in breeding stock and equipment for the peak numbers of hogs.

The expected increase in beef cow numbers during the emergency period is not so great as the desirable increase during the long-term period in the corn area. Farmers throughout the corn area, and especially those who have cropland which should be used as pasture following the emergency, may increase beef cow numbers and feel that they have made definite plans for the future. But discretion should be used, in incurring extensive indebtedness by the purchase of high priced breeding stock.

Where extensive indebtedness is unavoidable in an expansion of beef cattle enterprises, an expansion in sheep enterprises would be safer inasmuch as they can be "grown into" more quickly and they yield relatively quick returns.

An increase in feedlot feeding of feeder cattle is expected unless it is prevented by high prices for feeders. It would be desirable to decrease this emphasis again after the war, particularly in the Corn Belt proper.

Adjustments in dairy, poultry, and sheep production that are expected to take place in the various farming areas during the emergency period are considered desirable for the long-term period.

Crop production.- The increases in livestock production are expected to be made possible during the emergency period by the production of feed grains, roughages, and pasture. Feed grains are expected to be increased by (1) substituting higher yielding feed grain crops, such as corn and barley for oats and wheat, in areas where that is practical, (2) production of feed grains on a part of the land which was lying idle or being summer fallowed in 1939, (3) obtaining higher yields for crops; that is, yields approximately equal to the 10-year average yields during the period 1923-32 7/, (4) harvesting more nearly a normal percentage of the land that is planted to crops, thus assuming less crop failure (tables 16, 17, 18, 19). Increases in roughages are expected as a result of an increase in acreages of hay crops and higher yields. The assumed climatic conditions are expected to increase the carrying capacity of pastures. Shifts in crop production during the emergency period are expected to be roughly in line with defense needs.

The number of acres of wheat harvested is expected to decline 23 and 16 percent from the 1939 level in the Corn Belt proper and first fringe, respectively, and increase 7 percent in the second fringe. During recent years more wheat than usual was harvested in the Corn Belt proper and the first fringe. In the second fringe reductions in seeded acreages of wheat and crop failure prevented the harvesting of the normal acreages of wheat. Farmers are expected to comply with the wheat marketing quotas and plant approximately the acreages allotted in each of the areas.

More acres of corn are expected to be harvested in all areas during the period 1943-45, as compared with 1939, amounting to 11, 16, and 16 percent in the Corn Belt proper and the first and second fringes of the corn area, respectively. Because of the outstanding competitive position of corn in the eastern part of the corn area the greatest increase may be expected in that part of the area. Increases in the western areas are

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7/ Expected yields have been considered to be approximately equal to the average yield during the period 1923-32.

expected because of the probability that a larger percentage of the planted corn acreage will be harvested under normal climatic conditions and also because corn may be grown in place of wheat when wheat acreages are smaller than they were in 1939.

Barley acreages are expected to be increased, the greatest increase occurring in the first fringe of the corn area, where it is expected to be substituted for wheat and oats. Corn allotments in the Corn Belt proper are expected to encourage barley production, although it is not normally so desirable a crop for feed production in this area as is corn. In general, more feed units of grain can be produced with barley than with oats, and the new varieties of barley can be more nearly substituted for oats as a nurse crop than formerly. Acreages of oats are expected to decline, although varietal improvements have enhanced the prospects of obtaining higher yields. Other feed grains are expected to decline in importance. Only in the southern part of the second fringe are acreages of grain sorghums expected to be maintained at the 1939 level.

Legume hay acreages, mostly alfalfa, are expected to increase over 50 percent in each of the areas. Farmers have been attempting to obtain more acres of legume hay during recent years, but have had difficulty on account of unfavorable climatic conditions.

During the long-term period it is desirable that pasture and hay crops be substituted for considerable acreages of feed grains in the corn area. The large reductions in wheat acreages from the 1939 level that are expected during the emergency period are not desirable for the long-term. This is particularly applicable in the first fringe.

In the Corn Belt proper it is desirable that corn acreages exceed the 1939 level, barley acreages be equal to, and oats, grain sorghums and wheat acreages be less than acreages in 1939. In the first fringe area, slight increases in corn, barley, and wheat, accompanied with reductions in oats, sorghums, and rye, are desirable. In the second fringe substantial decreases in acreages of corn, other feed grains, and wheat is desired because of the needed retirement of cropland. Reductions in wheat and barley would be relatively less than reductions in corn and other feed grains.

In the second fringe of the corn area climatic conditions vary so much that it is advisable for farmers to carry out a flexible crop program. It has been a common practice in the area to plant more wheat than usual when moisture conditions were favorable in the fall of the year and less when moisture conditions were unfavorable. It is highly desirable that this flexibility in wheat seedings be provided for in the second fringe area and in certain portions of the first fringe.

Crop production versus pasture.- Very little change, if any, is expected in acreages of pasture during the emergency period. The competitive position of grain-fed livestock is expected to be maintained or improved. Therefore, crop acreages are expected to be maintained. Increases in numbers of pasture-consuming livestock are expected to be made possible by increased feeding and an increase in the carrying capacity of pastures.

During the long-term period it is desirable that the acreage of cropland be reduced about 9 percent in the corn area. The suggested reductions are 14, 7, and 5 percent in the second fringe, first fringe, and Corn Belt proper, respectively (tables 16, 17, 18, 19). The reductions are desirable, because of the need for conserving soil resources and an anticipated demand situation that is favorable for forage consuming livestock.

Even during the emergency period it is desirable that farmers be encouraged to shift the least-productive and most-erosive cropland to pasture production. This may be done without jeopardizing the opportunity of maintaining adequate food supplies, provided encouragement is given at the same time to produce more feed on the most productive croplands.

It is especially desirable to increase acreages of pasture in the Corn Belt proper during the emergency period. There, an expansion in dairy production beyond that which is expected during the emergency period is considered advisable. Since increases in pasture acreages are also desirable for the long-term period, it appears that further encouragement toward this end would be beneficial. In this area it seems desirable to expand numbers of dual-purpose cows along with the dairy breeds. Dual-purpose cows will yield relatively quick returns in the form of dairy products; they will thus contribute toward the attainment of national goals for dairy products; and they will form the nucleus for permanent beef herds which are desirable in this area over the long run.

Size and number of farms.- A decrease of approximately 3 percent is expected in the number of farms in the corn area during the emergency period, the greatest decrease occurring in the second fringe area. Many farmers operating small units and others who may have planned to start farming, are expected to be engaged in defense and other activities.

It is desirable that farm numbers decrease during the long-term period. This is necessary, if satisfactory incomes are to be obtained on those farms where considerable cropland is diverted to pasture uses and if advantage is to be taken of improvements in farm machinery.

Even though it is expected to be profitable to use the least-productive and most-erosive cropland for pasture during the long-term period, it is probable that less income per acre will be received from that land than was received in the pre-drought years. The diversion of cropland to pasture changes the type of farming and makes it possible for the farm operators to manage larger areas of land, but each farmer finds it necessary to operate more acres in order to maintain income at the former level. It is estimated that a decrease of approximately 20 percent in the number of farms in the corn area would be necessary if satisfactory incomes are to be obtained. The greatest decreases would be in the Corn Belt proper and second fringe. It is possible that improvements in farm machinery and in forms of management would tend to induce greater decreases in the number of farms. However, other factors such as the difficulty of finding satisfactory jobs in other vocations tend to retard the reduction in the number of farmers on the land.

The decreases in numbers of farms is in harmony with defense needs during the emergency period. It makes possible an increase in the supply of labor for defense activities. An increase in sizes of farms facilitates the use of mechanized equipment.

Summary of Suggestions for Facilitating Desirable Adjustments in the Corn Area

(1) Provide greater encouragement for dairy production in order that reserve supplies be produced for defense needs. This may take the form of providing facilities for increasing production, rather than increases in minimum prices.

(2) Encourage the production of higher yielding feed-grain crops on the most productive and least erosive soils.

(3) Encourage shifting of some of the least productive cropland to pasture uses, especially in the Corn Belt proper during the emergency period. This is in line with short-term needs for increasing dairy production and the long-term desirable situation.

(4) Discourage the plowing of land primarily suited for pasture for purposes of temporary crop production. In some cases the breaking of sod land may be desirable.

(5) Encourage enlargement of farms that are too small to provide an adequate living for the farm family.

(6) Maintain large reserve supplies of livestock products and feed grain for any emergency during the defense period.

(7) Permit the diversion of wheat into feed uses especially in the southern portions of the area where wheat is a strong competitor with corn.